



PROCEEDINGS
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AN UNDESCRIBED SUBSPECIES OF *LEIOCEPHALUS*
RAVICEPS COPE (SAURIA: IGUANIDAE)
FROM WESTERN CUBA

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Leiocephalus raviceps Cope is one of five Cuban members of this exclusively West Indian genus. Long very poorly represented in collections, *L. raviceps* has recently been shown (Schwartz, 1960) to have a peculiarly disjunct distribution: two subspecies, *raviceps* and *uzzelli*, occur along the southern coast of Oriente Province between the Bahía de Santiago and Cajobabo, whereas a third subspecies, *klinikowskii*, occurs on the northern shore of the Península de Hicacos in northern Matanzas Province (Schwartz, 1960; Buide, 1966). Schwartz (1960:81) noted that there seemed a good possibility that other populations of *L. raviceps* remained to be discovered throughout Cuba. This supposition has very recently been shown to be correct, although the lizards were found far to the west of the previously known most western population (*klinikowskii*).

A colony of *L. raviceps* was discovered in 1965 by Sr. Miguel L. Jaume, director of the Museo Felipe Poey, La Habana, Cuba, and Dr. Zdenek Vogel, of Prague, Czechoslovakia. Additional specimens from this population were collected by the junior author and Sr. Jaume in 1967, so that there is now an adequate series of these lizards available. The colony occurs in the vicinity of Cortés, in western Pinar del Río Province, near the base of the Península de Guanahacabibes,

removed some 320 kilometers to the southwest of *L. r. klini-kowskii* in northern Matanzas Province. Specimens of this distinctive new subspecies have been deposited in the collection of the Instituto de Biología, Academia de Ciencias de Cuba (IB), the Museo Felipe Poey (MFP) and in the collection of the senior author (ASFS). We are very grateful to Sr. Jaume for assisting us in all ways in this project and to Ing. Héctor Sagué D. for his cooperation and his making our collaboration possible. We have examined, in addition to specimens of the new subspecies, material of the subspecies *raviceps* and *uzzelli* in the collection of Brigham Young University (BYU) and the senior author and wish to thank Wilmer W. Tanner for bringing to our attention the presence of these specimens in the BYU collection.

The Pinar del Río population of *L. raviceps* is quite different from the three more eastern subspecies; we take very great pleasure in honoring Sr. Jaume, one of the discoverers of these lizards, by naming them.

***Leiocephalus raviceps jaumei* new subspecies**

Holotype: IB 1349, an adult male from San Waldo, 4 km N Cortés, on the road between Cortés and Isabel Rubio, Pinar del Río Province, Cuba, one of a series collected 6 March 1967 by Orlando H. Garrido and Miguel L. Jaume.

Paratypes: IB 1341-45, MFP (9 specimens), ASFS V11458-66, same data as holotype; IB 179, IB 196-98, same locality as holotype, 3 May 1967, O. H. Garrido and M. L. Jaume.

Diagnosis: A subspecies of *L. raviceps* characterized by a combination of small size (males to 61 mm, females to 49 mm snout-vent length), lateral fields in both sexes overlaid with circular to subcircular inky black spots from the neck to the groin and onto the upper surface of the hindlimbs and basal lateral and ventral portions of the tail, and throats of females and subadult and juvenile males dotted with black or brown to dark gray discrete subcircular spots; low number of scales at one half midbody, moderate number of fourth toe tricarinate subdigital scales, modally 4 median head scales, modally 4 frontoparietal scales, the frontoparietal row frequently incomplete, and high mean number of loreal scales.

Distribution: Known only from the type locality.

Description of holotype: An adult male with the following measurements (in millimeters) and counts: snout-vent length 61, tail 77, tip regenerated; snout to anterior border of tympanum 13.4, head width 10.9; supracocular scales 7/7; loreals 6; temporals 12; enlarged auricular

scales 3/3; prefrontal row 3 scales, complete; 4 median head scales; frontoparietal row 4 scales, incomplete; dorsal crest scales occiput to vent 65, dorsal crest scales occiput to axilla 27; scales around half body at midbody 33; fourth toe subdigital tricarinate scales 27/26; supraorbital semicircles complete; parietal scales in contact.

Dorsum (as preserved) medium brown (whitish in life), with dorsal crest scales cream, and dorsum densely punctate with creamy to pale golden scales, especially from about midtrunk onto the base of the tail; head scales paler yellowish tan (clear brownish in life), suffused with whitish; lateral fields between fore- and hindlimbs slightly darker brown than dorsum with three longitudinal rows of inky black circular or sub-circular spots, those on the neck larger than those on the sides; of the three longitudinal rows on the sides, the median row contains the largest spots; sides of tail and upper surface of hindlimbs with black to very dark brown (reddish to violet in life) spots; lateral fields additionally with scattered cream scales and bordered below by a pale reddish tan (grayish brown in life) longitudinal stripe between the fore- and hindlimbs with two longitudinal series of small black dots below the pale ventrolateral stripe; postocular spot solid, black, with a vertical white (pure yellow in life) line separating its posterior third dorsally; throat pale gray with some very small and vague gray flecks laterally, intermixed with cream to white iridescent scales; chest and venter white, with a few vague pale gray spots on the chest, venter immaculate except for scattered iridescent cream to white scales laterally; underside of fore- and hindlimbs concolor with venter, the former immaculate, the latter with scattered brown flecks; tail cream below, rather heavily punctate with dark gray spots basally, and concolor with dorsum above, with about 17 faintly darker crossbands or widely opened chevrons to the regenerated tip.

Variation: The series of 28 *L. r. jaumei* is composed of 19 males with snout-vent lengths between 42 mm and 61 mm, and nine females with snout-vent lengths varying from 32 mm to 49 mm; the sexes may be distinguished externally by the presence of two pairs of enlarged postanal scales in males. Scale counts (means and extremes) from this series are: dorsal crest scales between occiput and vent 61-72 (mean 65.3); dorsal crest scales between occiput and axilla 22-30 (26.4); one half midbody scales 27-34 (30.5); fourth toe subdigital tricarinate scales 23-28 (25.4); loreals 3-8 (4.7); temporals 11-14 (12.4); supraoculars 7/7 (10 specimens), 5/6 (1), 6/6 (5), 6/7 (5), 7/8 (3); prefrontal row 3 scales, usually complete (24 of 27 specimens); median head scales 4-6 (mode 4); frontoparietal row 2-5 scales (mode 4), usually complete (15 of 26 specimens) but with a high frequency of incomplete rows; semicircles usually complete (22 of 25 specimens); and parietals usually in contact (24 of 26 specimens).

Male *L. r. jaumei* (as preserved) vary in dorsal pattern. In younger males, the dorsum is weakly zonate, with a central darker brown zone (bisected by the cream median dorsal crest scales) and a pair of more

lateral tan zones, often heavily flecked with cream scales. In older males, the back becomes more unicolor tan to medium brown (grayish or whitish in life) and the zonation is lost or at least greatly obscured by the admixed dorsal cream colored scales. There is seldom any indication of either dashes or herringbones in the dorsal pattern. The lateral fields are always somewhat darker than the dorsum immediately above them and are heavily marked with about two to four longitudinal series of inky black, circular, subcircular or even ovoid spots, the spots extending onto the base of the tail along its sides and onto the upper surface of the hindlimbs, where the spots are more dot-like. The lateral fields also contain scattered pale iridescent scales which were presumably creamy in life. The postocular blotch is present and black in all males, but often there is a pale to white (yellow in life) vertical bar which cuts off the posterior third of the blotch from the anterior two thirds. The blotch is delimited anteriorly by a vertical white (yellow in life) bar from the posterior portion of the eye and the vertical white bar is bordered anteriorly in turn by a vertical black to dark gray bar. The lateral nuchal spots are usually somewhat larger than the more posterior spots, and there are only one or two rows of blotches on the neck. Subadult males (snout-vent lengths 42 mm to 50 mm) have the throat patterned with scattered dark gray ovoid spots, not aligned into longitudinal series; with increasing age and size, these dots become increasingly less obvious so that in large males they are absent or may be represented only by some very vague grayish spots, intermixed with iridescent cream scales, along the sides of the throat. The lateral margins of the venter in subadult males likewise are distinctly punctate with dark brown dots; in some adult males these persist along the sides of the venters, whereas in others they disappear, leaving only some areas of iridescent paler scales on the belly margins. The underside of the hindlimbs is speckled with brown and iridescent pale scales as is also the underside of the proximal portion of the tail.

Female *L. r. jaumei* are distinctly zonate dorsally, the central darker brown region (which is longitudinally bisected by the pale median dorsal crest scales) having a series of about twelve diagonally placed (apices directed posteriorly) chevron remnants between the occiput and the sacrum. The lateral fields resemble in detail those of the males, and there is no sexual dichromatism nor ontogenetic change in the presence of the circular black lateral spots. The lateral fields in females are clearly bordered below by a longitudinal pale line between the limbs and there are small black dots below this line which continue onto the abdomen as scattered dark brown flecks. The throat in females is spotted with circular to ovoid dark brown to dark gray spots which extend onto the chest. The underside of the hindlimbs lacks dark brown spotting except along the anterior margin of the thighs, and the underside of the tail is brown spotted, at least proximally. A striking feature of female *jaumei* (in contrast to the other subspecies) is the anterior continuation in most specimens of the dorsal dark zone as a pair of fairly broad dark slightly

divergent stripes onto the head shields as far as the supraocular scales; thus the occipital region of female *jaumei* has a distinctly pale-and-dark striped aspect.

Comparisons: *L. r. jaumei*, in having lateral fields with black spots, is so very distinct from the remaining three subspecies that extended comparison of pattern is unnecessary; *raviceps*, *uzzelli*, and *klinikowskii* have been figured (Schwartz, 1960) and none of them has lateral black spots or has the females and subadult males with spotted throats. *L. r. jaumei* differs in many other details of pattern, and as far as known lacks the herringbone or dashed patterns of the other subspecies (the nominate subspecies also lacks dorsal dashes). In general intensity of color, *jaumei* is apparently slightly darker than the pale sandy to almost white *klinikowskii*, is paler than *uzzelli*, and is paler than *raviceps*, which itself has a faded or washed-out appearance.

In dorsal crest scales between occiput and vent and between occiput and axilla, and in fourth toe scales, *jaumei* does not differ significantly from the other three subspecies. As far as one half midbody scales is concerned, the much lower mean ($30.5 \pm .64$ = twice standard error of mean) in *jaumei* is significantly different from those of *klinikowskii* ($35.3 \pm .65$), *uzzelli* ($32.4 \pm .70$), and *raviceps* ($32.3 \pm .70$). The three western subspecies are all larger than *jaumei*, with male *raviceps* reaching a maximum size of 80 mm snout-vent length, *uzzelli* males to 71 mm and *klinikowskii* males to 69 mm. Females of all races are comparably larger than female *jaumei*. *L. r. jaumei* resembles *raviceps* and *uzzelli* in modally having 7/7 supraoculars; *klinikowskii* modally has 6/6 supraoculars. In modally having 4 median head scales, *jaumei* also differs from *klinikowskii* (mode 6) but is like the two Oriente races. The mode of 4 frontoparietal scales in *jaumei* is like that of *uzzelli*, but differs from *raviceps* and *klinikowskii* (mode 5). *L. r. jaumei* has the highest incidence of incomplete frontoparietal row (42 per cent); frequencies in the other subspecies are: *uzzelli* (35 per cent), *raviceps* (22 per cent), and *klinikowskii* (9 per cent). In usually having the supraorbital semicircles complete, *jaumei* resembles *raviceps* and *klinikowskii* and differs from *uzzelli* which more often has the semicircles incomplete. The higher loreal mean (4.7) in *jaumei* is greater than those of *klinikowskii* (4.2), *raviceps* (3.6), and *uzzelli* (3.3).

Remarks: The occurrence of *L. raviceps* far to the west of its previously known range is extremely interesting. Doubtless there are still other localized populations of this species scattered in seldom visited or remote localities throughout Cuba; the increasing knowledge of the distribution of *L. stictigaster* (see Schwartz and Garrido, in press) indicates that much is yet to be learned of the details of distribution of Cuban *Leiocephalus*. The very distinctive lateral and ventral patterns of *jaumei* suggest that this subspecies has been long separated from the balance of the species to the east. The environs of the Península de Guanahacabibes continue to reveal an increasingly rich and varied herpetofauna as exploration in that area goes forward. It is interesting

that in this same general region (but not in the immediate region of Cortés) there is an endemic subspecies of *L. macropus* (*koopmani* Zug; see Schwartz and Garrido, 1967, for details), another *Leiocephalus* which is predominantly eastern in distribution but which also has several non-Oriente subspecies scattered over the balance of Cuba.

Through the courtesy of Ernest E. Williams at the Museum of Comparative Zoology at Harvard University, we have examined a short series of *L. raviceps* from Baracoa, Oriente Province; the species has been previously known from this immediate region by a single specimen in the Museo y Biblioteca de Zoología de la Habana, formerly under the care of Sr. Jaume. The additional five Baracoa specimens (MCZ 13371-75) are all males with snout-vent lengths between 61 and 66 mm; the lizards have been long preserved and some details of pattern (and of course color) are no longer clear. These lizards are geographically closest to *L. r. raviceps*, but are separated from that subspecies by the Sierra de Purial (unless *L. r. raviceps* is continuous along the south and north Oriente coasts in this region via Cabo Maisí, an area where the species remains uncollected). The Baracoa specimens are unusual in that, of the five, four have supraocular counts of 6/6; modally *L. r. raviceps* has 7/7 supraoculars, although 12 of 44 specimens of this subspecies have 6/6 supraoculars. All Baracoa lizards have 3 loreals. Both of us have collected extensively in the Baracoa area, yet neither of us has secured *L. raviceps* in that region. Possibly these lizards are not from the immediate area of the city itself; considering that *L. raviceps* is regularly, in Oriente, an inhabitant of extreme xeric regions and that the immediate environs of Baracoa are very mesic (with *L. macropus asbolomus* Schwartz and Garrido the dominant *Leiocephalus* in coastal areas), it seems probable that *L. raviceps* has a very limited distribution in the Baracoa area. It seems equally likely that, when the species is finally encountered in that region, the local population will be found to differ from *L. r. raviceps* to the south.

As pointed out above and elsewhere (Schwartz, 1960:75-76; Schwartz and Garrido, 1967:29) *L. raviceps* occupies extremely arid coastal areas in Oriente; Schwartz (1960:79-81) and Buide (1966:7-9) commented on the restriction of *L. r. klinikowskii* to white beach sands with sparse vegetational cover. Buide (*loc. cit.*:8) noted that the Matanzas lizards were reluctant even to enter the more heavily wooded areas of the peninsula but would do so if hard pressed or in danger. All eastern localities of *L. raviceps* are coastal with the exception of a short series in the southern foothills of the Sierra de Purial, north of Cajobabo.

The specimens of *L. r. jaumei* were secured between 300 meters and one kilometer to the north of the hamlet of San Waldo. The length of the road between Cortés and Isabel Rubio is about 11 kilometers, but for no more than 4 kilometers along this stretch of road the soils are gray or ash-colored sands; on both sides of these gray sands are found soils which are the typical yellow clays of this region. The gray sands support a wooded growth, including a kind of palm as well as low

herbs. The area of gray sands, although narrow as far as the area crossed by the road is concerned, may be much longer than the road transect indicates. *L. r. jaumei* was encountered by the junior author on the bleakest portions of the sandy area. In the better wooded portion of the gray sands were found *L. stictigaster* and *Ameiva auberi*.

L. r. jaumei began, on 6 March 1967, to emerge from their burrows under fallen palm trunks at about 1000 hours, and were most active at 1100 hours. If unfrightened, the lizards remained near their burrows or (preferably) on the fallen palm trunks above the burrow mouths. When disturbed, the lizards ran with great speed toward the burrow and many remained 2 or 3 inches from the burrow mouth in an attitude of observation. Others quickly entered the burrows and remained there. At other times, lizards which were disturbed away from their burrows ran beneath the fallen palm trunks. One female contained an egg ready for deposition, but no juveniles were observed on 6 March. A pair was seen in copulation.

We do not know if *L. r. jaumei* occurs elsewhere in the Cortés region or in western Pinar del Río Province. If this subspecies is really limited to such precise an ecological situation as it seems to be, it may well be that *jaumei* is indeed restricted to the area about the type locality. It also seems logical to expect that there are other relict populations of *L. raviceps* which remain yet unknown. If the species, outside of Oriente, demands very specific soil and vegetational conditions for survival, the discovery of other extra-Oriente populations of *L. raviceps* seems more than probable, provided the collector stumbles by chance into the precise locality where these ecological conditions are met and where the lizards may occur. Persistence of relict extra-Oriente populations of two *Leiocephalus*, one of which (*macropus*) inhabits mesic forested situations and the other (*raviceps*) bleak and xeric situations, in the general region of the Península de Guanahacabibes, is a most interesting phenomenon. Considering also that western Pinar del Río is occupied by two other *Leiocephalus* (*stictigaster*, the clearly dominant Pinar del Río species, and *carinatus*), it would be most interesting to know the precise details of distribution of all four species in this region, and the ecological interrelationships of the four species involved. Most remarkable is the fact that the two species which are relict in this region (*raviceps*, *macropus*) presumably at one time had an island-wide distribution (much as *carinatus* does today); with changing geography and changing ecologies, these two species are represented in western Pinar del Río by limited or extremely circumscribed populations. Further details of the distribution of *L. raviceps* in the area intervening between the known ranges of *klinikowskii* and *jaumei* will be most interesting to determine.

Specimens examined (other than *L. r. jaumei*): *L. r. raviceps*, mouth of Río Yateras, 10 mi. E U. S. Naval Base, 43 (ASFS V11220-31, BYU 30258-63, BYU 30285-309); *L. r. uzzelli*, mouth of Río Hatibonico, 14 (ASFS V11215-19, BYU 30241-42, BYU 30246-52).

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